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Buyers' Perceptions of the Risks of Internet Enabled Reverse Auctions

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ABSTRACT

In addition to reducing the purchasing cost, Internet Enabled Reverse Auctions (RAs) are now being used by buyer firms to explore new suppliers. The decision to use RAs is increasingly being recognized for its strategic importance to buyer firms. However, such decisions of strategic importance are presumably accompanied by equally serious risks. The first step to managing such risks is identifying what they are. Unfortunately, there is no validated check list of buyer risks that can assist firms when using RAs. We have taken the first step towards addressing this issue by developing an authoritative list of the important risks associated with the use of RAs as a sourcing strategy. By employing a rigorous ranking type Delphi survey methodology, we developed a comprehensive list of the key risks ranked by their relative importance. Implications of our findings for both researchers and sourcing professionals are discussed.

Keywords

Internet Enabled Reverse Auctions, Delphi Methodology

INTRODUCTION

An Internet Enabled Reverse Auction (RA) can be described as a real time, dynamic event between a buyer firm and suppliers. During a forward auction, or 'auctions' as we know them, buyers compete and bid to increase the price to purchase a product. Contrary to this, in an RA event, the suppliers compete and bid against each other to reduce the price of the products or services, to win the business with the buyer firm. The buyer sets the rules of the RA event, invites suppliers to participate, provides the specifications of the products or services for which suppliers submit their bid, and determines the supplier(s) to award the business.

The use of RAs as a means of cost savings emerged in the mid 1990s (Kumar and Chang 2007) and is continuing to have a profound impact on the way in which firms source products or services from incumbent and potential suppliers. RAs have been shown to achieve average gross savings of 15% to 20% (Emiliani 2000; Jap 2003; Hur, Hartley et al. 2006). When a firm has about a 20% gross margin, every $1 saved in procurement is equivalent to adding $5 in revenue (Jap 2002), indicating their capability to improve the buyer firm's performance. In addition to reducing the purchasing cost, RAs are also being used by buyer firms to explore new suppliers. Similarly, suppliers can use them to gain a new customer base (Jap 2002). RAs are hence believed to have a broader purpose than a mere cost cutting solution. Some buyer firms invest in technology to purchase e-sourcing tools, which are used to conduct RAs, while others use third party applications (Mabert and Skeels 2002). Either way, the decision to use RAs as a sourcing strategy involves investment of time, manpower and financial resources (Min and Galle 2003; Teo, Lin et al. 2009), qualifying them to be considered as a strategic decision (Chandler 1973; Fredrickson and Mitchell 1984; Andrews and David 1987). Keeping in mind their use not only to reduce purchasing cost, but also to find new suppliers, RAs are considered to be strategically important for a firm's overall performance.

The strategic importance of the decision to use RAs has been recognized across industry sectors (CAPS Research 2009) and their growing popularity is indicated by the fact that public firms are now increasingly employing RAs for procurement, even

though it was private firms that catapulted the use of RAs (Shalev and Asbjornsen 2010). The decision to adopt and use RAs not only has strategic implications for the buyer firms (Jap 2002), but also carries significant embedded risks (Baird and Thomas 1985). These risks, if not well understood and managed, can be damaging to the firm (Baird and Thomas 1985). Baird and Thomas in their 1985, Academy of Management Review paper titled "Towards Contingency Model of Risk Taking" suggest three stages of risk management: Risk Identification, Risk Estimation and Risk Evaluation. The first step towards strategic risk management practice is the identification of risk itself. There is unfortunately no scientifically validated list of RA risks that can assist senior managers in a buyer firm to identify and take appropriate precautions when using RAs as a sourcing strategy.

While the characteristics, advantages, challenges, and impact of RAs on a firm's performance have been discussed in the literature (Seshadri, Chatterjee et al. 1991; Bichler, Kaukal et al. 1999; Emiliani and Stec 2001; Boyer and Olson 2002; Jap 2002; Jap and Mohr 2002; Jap 2003; Mithas and Jones 2007), there has been a conspicuous gap in the understanding of the risks that RAs carry for the buyer firms. There is no clear understanding of why the use of RAs can be risky and what the specific risk factors are for the buyer firms. We examine the extant literature and argue that the current understanding of risks in the use of RAs is inadequate. We note that there is a need for a more holistic approach to help us identify what the specific risks are, why they pose serious threats to the success of RAs, and how they threaten the buyer firms that use RAs as a sourcing strategy.

BACKGROUND AND LITERATURE REVIEW

The early work on reverse auctions was explorative in nature (Seshadri, Chatterjee et al. 1991; Bichler, Kaukal et al. 1999; Emiliani and Stec 2001; Boyer and Olson 2002; Jap 2002; Jap and Mohr 2002; Jap 2003). It gave insights into what RAs are and how they can be used as a means of reducing the purchasing cost. The recent literature has studied the characteristics of auctions such as: number of bidders, auction type, auction visibility, auction duration (Boyer and Olson 2002; Jap 2002; Smart and Harrison 2002; Jap 2003; Wagner and Schwab 2004; Chen-Ritzo, Harrison et al. 2005; Mithas and Jones 2007), and their importance to a firm's sourcing strategy (Emiliani and Stec 2002; Mabert and Skeels 2002; Beall, Carter et al. 2003; Carter, Kaufmann et al. 2004; Kaufmann and Carter 2004). The literature has also focused on informing what factors motivate and eventually lead to the use of RAs by a firm (Mithas, Jones et al. 2008) and their impact on the buyer-supplier relationships (Smart and Harrison 2003; Jap 2007). Though some literature has discussed the risks of using RAs (Smeltzer and Carr 2003; Carter, Kaufmann et al. 2004), there has been no concentrated effort in identifying them. Any particular work identifies only a scarce list of risks involved in RAs, thus falling short of offering comprehensive guidance on the important risks that a buyer firm should consider of when using RAs. We categorize the literature in to two strands of theoretical grounding: relational and transactional risks.

Relational Risks:

As suggested by Dyer and Singh (1998), a firm's critical resources may extend its boundaries. A firm's productive gains and competitive advantage depends on its trading partners' willingness to make idiosyncratic investments. Multiple studies in past have established that a buyer firm's decision to use RAs is viewed by its suppliers as short term oriented. Suppliers believe that the buyer does not value the relationship and is concerned about its own gains. The use of RAs thus weaken the buyers' existing strategic relationships with its suppliers (Jap 2002; Smart and Harrison 2003; Emiliani and Stec 2004; Giampetro and Emiliani 2007) and prevent them from making idiosyncratic investments (Charki and Josserand 2008). The outcomes are that the buyer is seen as exploitative by the supply base, which can have a damaging impact on its reputation among its trading partners (Griffiths 2003; Carter, Kaufmann et al. 2004; Elmaghraby 2007). The suppliers may even refuse to participate in RAs because they believe that their business will be under extreme price pressure or they need to put too much effort for a pricing exercise where they have a minimal chance of winning (Tassabehji, Taylor et al. 2006).

Transactional Risks:

The interorganizational relationships mediated by Information Technology research stream has largely focused on transaction cost economics (TCE) theory (Mithas, Jones et al. 2008). We explore the risks according to the dimensions of TCE and discuss the role of opportunism, transaction characteristics, and uncertainty.

Opportunism: The role of suspicion and buyer-supplier opportunism has been greatly emphasized in the literature. Suppliers tend not to invest in non-price attributes of the relationship when they suspect that the buyer is using RAs opportunistically (Smeltzer and Carr 2003; Carter and Kaufmann 2007). This suspicion may arise either when suppliers think that the buyer accepted a bid outside of the auction (Carter, Kaufmann et al. 2004) or when the suppliers feel they were coerced into participating in RAs (Emiliani and Stec 2002; Carter, Kaufmann et al. 2004; Talluri and Ragatz 2004; Emiliani 2005).

Buyers can sometimes include incapable suppliers in the auction who will not be awarded the business (Jap 2002; Griffiths 2003; Carter, Kaufmann et al. 2004). Such incompetent suppliers are non viable and unable to take the business away from the incumbent suppliers. The unqualified suppliers put undue pressure on qualified suppliers for the price which is unfair to the sincere suppliers (Jap 2002; 2003; Carter, Kaufmann et al. 2004; Tassabehji, Taylor et al. 2006; Elmaghraby 2007). Consequently, sincere suppliers lose trust in the buyer (Beall, Carter et al. 2003; Griffiths 2003; Tassabehji, Taylor et al. 2006; Carter and Kaufmann 2007; Gattiker, Huang et al. 2007) and treat the relationship as an arm's length relationship. The source of the supplier distrust however, may also stem from rumors which can lead to supplier distrust even in the absence of buyers' unethical or opportunistic behavior (Charki and Josserand 2008). Such degradation of trust leads to reduction of suppliers' idiosyncratic investment in the relationship (Charki and Josserand 2008). It may also lead to opportunistic behavior by suppliers and they may even take revenge against the buyer by sharing sensitive information with its competitors (Charki and Josserand 2008). A buyer might also suspect that suppliers may be colluding in order to prevent the buyer extract value from RAs (Emiliani and Stec 2002; Carter, Kaufmann et al. 2004; Talluri and Ragatz 2004; Emiliani 2005). Suppliers may also play an opportunistic role by first winning an auction on low price, but later recoup their profit by charging for any changes in the product or service specifications (Carter, Kaufmann et al. 2004; Emiliani 2005). Suppliers eventually retaliate against their customer when the opportunity arises for them (Emiliani and Stec 2004).

Transaction Characteristics: To successfully conduct RAs, a buyer firm should ensure that all the suppliers understand the product specifications, and place their bids accordingly. The ambiguity related to the specifications makes suppliers bid on products which can be interpreted differently by different suppliers, which may not match the buyers' requirements (Beall, Carter et al. 2003; Smeltzer and Carr 2003; Kauffman and Mohtadi 2004). It is important for the buyer firm to ensure that the suppliers clearly understand the specifications and place their bids correctly. RAs are usually conducted on large volumes of products. Such volumes are divided into lots and the buyer firms conduct auctions on these lots. It is imperative that the buyer firms structure their lots such that it maximizes the number of participants. It is also very important to include appropriate suppliers for these lots. Smaller but capable suppliers may not be able to bid on large lots and thus lose business from a potential customer. By not structuring the lots properly, buyers risk strengthening powerful suppliers (Smeltzer and Carr 2003; Carter, Kaufmann et al. 2004). This may drive the smaller suppliers out of business and thus can have an adverse long-term impact on the buyers' supply base (Carter, Kaufmann et al. 2004).

It is also important for the buyer to clearly communicate the auction rules and define how the award decision will be made (Jap 2002). Desperate suppliers bid aggressively to win the business, but may not be the buyers' final choice. This is often times due to suppliers not understanding the auction process and the award rules (Carter, Kaufmann et al. 2004). In addition to the award rules, the buyer should also inform the suppliers about the auction format. Prior research has shown that those auctions in which the bid prices of the suppliers are visible to the competing suppliers are not very successful (Jap 2002; Carter, Kaufmann et al. 2004). Buyers should keep the participating suppliers informed about whether the auction event will be a sealed or open bid, whether the price of the lowest bid will be visible to others, if the auction will have a hard or a soft close, and of the minimum required bid decrement (Jap 2002; Carter, Kaufmann et al. 2004). If this is not done, the suppliers face difficulty in producing quality bids, and the outcome of auctions does not yield the desired results. Though the purpose of the RA event is to drive the prices down, the lowest bidder is not always the best supplier. It is, however, enticing for a buyer to consider the low prices. Such low prices in an auction event are accompanied by large switching costs which nullify any expected advantage. By not taking into consideration the total cost of ownership (TCO) and focusing on the price alone (Emiliani and Stec 2002; Smart and Harrison 2003; Emiliani and Stec 2005; Hur, Hartley et al. 2006), the buyer may end up investing in a supplier from whom it cannot recoup the switching costs. A supplier might have bid an unrealistically low price in the auction (Carter, Kaufmann et al. 2004; Emiliani 2005), and if a buyer decides to purchase from such a low cost supplier, the supplier may not be able to maintain the offered auction price. In order to maintain the offered price, the said supplier compromises on the quality of service and support (Beall, Carter et al. 2003).

Uncertainty: It can be difficult for a buyer firm to gauge the uncertainties when using RAs. Conducive market has been described as one of the necessary conditions for RAs to yield desired results (Smeltzer and Carr 2003). When a buyer determines that there is large enough market, it needs to ensure that it has enough internal support. Resistance to RAs within the buying firm can derail this process (Griffiths 2003). Next, the buyer needs to determine which supplier to invite in the auction. It can be particularly difficult for a buyer to understand the non-price attributes of a potential supplier (Smeltzer and Carr 2003; Carter and Kaufmann 2007). Once appropriate suppliers have been selected to participate in the auction, the buyer should ensure that there are enough suppliers vying for the buyers' business. Lack of competition can limit the usefulness of RAs and the buyer firm can fail to generate any leverage from them (Beall, Carter et al. 2003; Kauffman and Mohtadi 2004).

RESEARCH METHODOLOGY

The purpose of this study is to develop an elaborate and authoritative list of risk factors that affect buyer firms when using RAs as a sourcing strategy. A complex task like this requires expertise in the field of strategic sourcing and procurement. However, a single expert is not likely to be able to produce an elaborate list of risks. It is important to ensure a reliable and valid data collection process. To do so, we must include a diverse group of experts with years of experience in sourcing and procurement, who have in past been involved in important decisions related to purchasing. Considering the explorative nature of the research questions, a ranking type Delphi survey methodology was used. A ranking type Delphi survey methodology is designed to elicit opinion of a panel of experts through iterative controlled feedback (Schmidt, Lyytinen et al. 2001). Figure 1 shows the Delphi procedure used in the study. We recruited an expert panel of senior sourcing and procurement professionals who had experience in purchasing products and services for their firms using both RA and non-RA methods.

Composition of the panel

Our panel was comprised of 28 senior sourcing and procurement professionals. The authors sent personalized emails to more than 200 professionals to recruit the panel. The list of these professionals was obtained from Institute of Supply Management (ISM). In addition to ISM, the authors also searched for professionals on the networking site LinkedIn. The industry types that the panel members represented include Manufacturing, Retail, Information Technology, Utility, Healthcare, Banking, Management Consulting and Hospitality. The panel members represented five countries namely: United States, India, United Kingdom, France and Argentina. All 28 of our panel members had direct experience with the use of RAs in their respective firms. The demographic profile of the panel is presented in Table 1.

Characteristic	Panel Profile	
Average (Total work experience)	19 years [Range 4-45]	
Average (Work experience in sourcing)	15 years [Range 3-45]	
Education	High School Diploma	7%
	Bachelors Degree	36%
	Masters Degree	54%
	Doctoral Degree	4%
Geographical Location	Argentina	4%
	France	7%
	UK	11%
	India	18%
	USA	61%
Is your company likely to use Reverse Auctions in future?	No	4%
	Yes	96%
Has your company established a formal process to learn from the experience with Reverse auctions?	No	43%
	Yes	57%
Number of Reverse Auctions participated in either directly or indirectly	0 to 5	14%
	6 to 10	0%
	11 to 20	18%
	21 to 50	21%
	51 to 100	11%
	101 or more	36%

Table 1. Demographic profile of the panel

DATA COLLECTION AND ANALYSIS METHOD

Phase I involved brainstorming to generate the initial list of risks for a buyer firm when using RAs. Due to the impracticality and logistics of bringing the panelists together for successive rounds of face-to-face meetings, the Delphi study was conducted over the internet. The researchers created a web-based interface for conducting the study. This custom interface also allowed us to capture the data into a SQL Server 2008 database and was programmed using Visual C# programming language. Before emailing the web-link to the panelists, all the researchers validated the instrument to check whether the data was being captured correctly in the database. Similar electronic instruments have been shown to provide various benefits

(Singh, Keil et al. 2009). It enabled us to reduce data collection time and improve efficiency in data analysis capabilities. The instrument also helped the researchers monitor the dynamic changes in the results with each additional response from a panel member, which included: monitoring of responses, selection of risks, changing ranks, and changes in the Kendall's W.

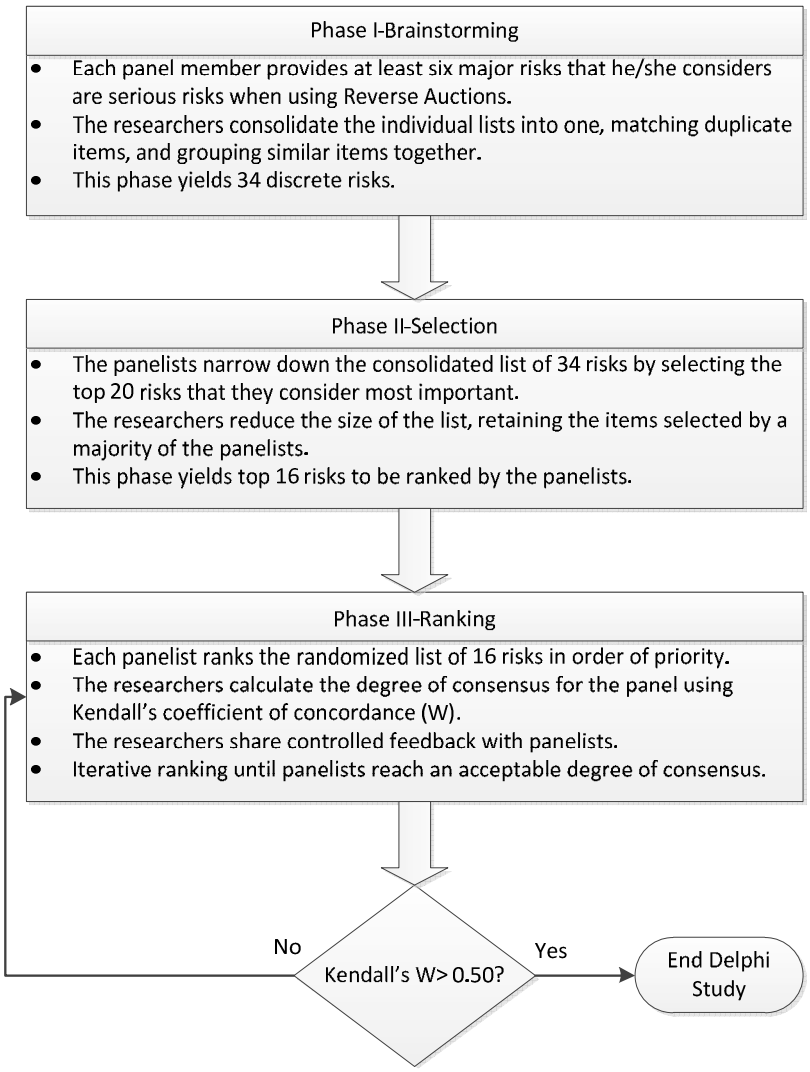

Figure 1. Delphi process – Adapted from Schmidt (1997)

We began the Delphi study with the brainstorming phase which involves asking each of the 28 panelists to provide six or more items that s/he considers to be serious risks when using RAs. The reasoning behind asking for six items was to not make the process too time consuming and yet achieve reasonable coverage of the domain. This was an open ended solicitation of ideas (Okoli and Pawlowski 2004; Singh, Keil et al. 2009). Each panel member was asked to provide a brief description of each item. These descriptions helped us to: (1) understand the various risks, and (2) remove duplicates by consolidating items with the same underlying meaning. We also required the panelists to answer a questionnaire to provide us with some basic demographic information, their experience with RAs, and their firm's involvement in RAs. By the end of Phase I, 28 panel members had provided a list of 174 risks of RAs with an average of 6.2 risks per panel member.

The four researchers worked together to consolidate and refine the list by grouping similar items together, removing the duplicates and sharpening some descriptions to improve clarity. The process yielded a consolidated list of 34 unique risks. A few panel members were contacted during the process for the clarification of their ideas from the first phase. This iterative process of refining (by grouping similar ideas together and eliminating duplicates) continued until all four researchers arrived at a consensus.

In Phase II, we sought to narrow the consolidated list into a more manageable set for the ranking phase. Following Schmidt's (1997) suggestion, we asked each panelist to select his/her top-20 risks from the randomized list of 34 risks from Phase I, which s/he believes to be the most important 20 risks that represent the most serious impediments when using RAs as a sourcing strategy. 23 panel members responded in this phase. After reviewing the selection of top-20 risks from each respondent, we retained only the risks selected by an overwhelming majority of the panel. We chose a cut-off value of 60%, as this gives our target range of 15-20 items for the subsequent ranking phase. With this process, the initial list of 34 risks became a more manageable reduced list of 16 risks at the end of Phase II.

Phase III involved ranking the top 16 risks from phase II. Each panelist was asked to rank the items in order of priority (i.e., rank the risk that they consider the most important as first, and so on). In order to provide controlled feedback, each risk to be ranked was accompanied with a value suggesting the percentage of panelists who had selected it in Phase II. We also asked the panelists to explain their rationale for selecting a particular item as their top ranked risk. Following Schmidt (1997), we used Kendall's coefficient of concordance (W) to measure the degree of consensus in the panel. The value of W can range from 0 to 1, with 0 indicating no consensus and 1 indicating a perfect (100%) consensus. A Kendall's W of less than 0.50 indicates low consensus where as 0.50 to 0.70 indicates moderate consensus. A Kendall's W more than 0.70 indicates strong consensus.

We followed Schmidt's (Schmidt 1997) recommendation and continued the ranking process until either: (1) the coefficient of concordance indicated good consensus or (2) the level of consensus for the panel leveled-off in two successive rounds. We conducted two rounds of ranking. 22 panelists responded in the first round of ranking. In the second round we asked the panelists to review and rank-order the list of risks. In the second round we provided the following information to each panelist as a controlled feedback: (1) the average rank of each risk, (2) the ranking by the panelist for each risk in the first round of ranking, and (3) the panelist's deviation from the group's mean ranking for each risk. As a second form of feedback, we also provided the panel with a summarized list of comments from the first ranking round where each panelist had explained their reasons for selecting a particular item as their top ranked risk. 16 panelists responded in the second round of ranking, yielding a Kendall's W of 0.503 which suggested that a moderate level of consensus had been reached and that we could have a reasonable degree of confidence in the rankings. We discussed whether we should conduct another round of ranking to obtain greater level of consensus. However, because of the drop in response rate and also the unlikely scenario that Kendall's W will be more than 0.70, we decided against a third round of ranking.

FINDINGS AND DISCUSSION

The final outcome of the study is presented in Table 2 where the final 16 risks ranked by the panel are presented. Our study surfaces 34 risks and draws out 16 major risks ranked by priority that are most important for a buyer firm to consider when using RAs as a sourcing strategy. The literature in the past has viewed relational and transactional characteristics of the RA risks; however, we find that such characterization of risks is insufficient in explaining the scope and dimensions of these risks, and falls short on providing adequate explanation of the phenomena of 'embedded risks' as suggested by Baird and Thomas (1985). Our findings extend and sharpen this characterization of the risks and suggest that there are four dominant themes that are inherent to the relational and transactional aspect of the risks which emerge when buyer firms use RAs as a sourcing strategy. The four themes are: Inappropriate configuration of the auction process, Organizational and market conditions that make RAs ineffective, Knowledge and information asymmetry, and Opportunism. The characterization of the risks into these four themes encompasses the major risks as suggested by our findings, and speak to the critical nature of appropriately configuring transaction environment supported by RAs aligned with the support of: organization and market conditions, opportunism, and knowledge and information asymmetry. We discuss our findings in the realms of these four themes.

Inappropriate configuration of the auction process: As suggested by our findings, the foremost requirement of the successful conduction of the RA event is that the requirements be correctly and adequately specified. To determine the exact specifications is the single most time-consuming exercise for a firm prior to the RA event. It is imperative that all the suppliers bid on the same requirements and those specifications are accurate and complete. The importance of this risk stems from the fact that incorrect or inadequately specified requirements can cause the entire RA event to fail. Such failure of the RA event exercise delays a buyer firm's sourcing projects and drains its investment on the allocated time and resources. Closely related to the risk of inadequately specified requirements is an equally serious risk of improper lot structuring. Buyers face the risk of segmenting the requirements into improper lots. This can lead to lower competition by excluding suppliers and making bidding more complex. For example, small suppliers may not have the capacity to bid on large lots; some suppliers may be interested only in a portion of the lot. A buyer cannot fully leverage the RAs unless all the suppliers are capable and content with the lot they are bidding on.

Rank	Average Rank	Risk
1	2.25	Inadequately specified requirements
2	4.5	Singular focus on price does not factor in total cost of ownership
3	5.69	Lack of competition in the auction
4	6.06	Inadequate supplier qualification
5	6.13	Resistance by internal clients within buying organization to reverse auction procedures and outcomes
6	6.38	Lack of top management support
7	6.75	Award terms not clearly communicated prior to auctions
8	8.88	Reluctance of suppliers to participate
9	9.44	Improper lot structuring
10	10.13	Buyer not faithful to the auction process
11	10.19	Omission of non-price criteria limits buyer's understanding of suppliers' full capabilities.
12	10.25	Market conditions not conducive for reverse auctions
13	10.56	Quality of service and support could be reduced by suppliers to achieve offered price
14	11.63	Failure to honor award terms deters future supplier participation
15	13.19	Inclusion of suppliers who will not be awarded the business
16	14.00	Suppliers lack adequate knowledge of reverse auction process

Table 2. Results of phase 3 after second round of ranking (sorted by average ranks)

In addition to the incorrectly specified requirements and improper lot structuring, the buyers face the risk of inadequately screening suppliers that participate in reverse auctions. This may lead to an incompetent supplier winning the auction. However, this can be avoided if the award terms are clearly communicated prior to the auction event. Failure to clearly communicate award terms can create resentment among suppliers and suppress competitive pricing.

Organizational and market conditions that make RAs ineffective: The crux of the buyer firm's relationship with its suppliers is its internal clients who regularly deal with their suppliers. The decision to implement and use RAs as a sourcing strategy, however, is taken by the firm's middle management, which includes sourcing and procurement managers. Lack of support from internal clients due to loss of control on supplier selection and concerns about quality, service and incumbent relationships can jeopardize the sourcing strategy. Internal clients can either block the auction upfront or block the award decision process. It is important that the sourcing professionals take the internal clients into confidence when deciding for or against RAs as a means of sourcing. Once the firm chooses to opt for RAs, it is important that in analyzes the market. Unfavorable market conditions for auctions can include high market volatility, a pure commodity product with known price (e.g. metals, crude), or a niche product with limited supply. Conducting RAs in an inappropriate market can hurt the buyer firm and can even lead to an increase in the procurement cost. The proper assessment of the market also includes the assessment of the supplier availability. Buyer firms should ensure that there is enough demand in the market for the buyers' business. The suppliers may refuse to participate in the reverse auctions; even if they agree, they may not bid actively due to

their company policy or previous experience with RAs. This may lead to the lack of competition in the RA event. Without adequate competition, the buyer may not obtain the lowest price the supplier would otherwise be willing to offer. Finally, the buyer firm should ensure that it has sufficient internal support for the auction results. The lack of top management support and commitment can limit the use of auctions and the enforcement of outcomes. If the outcomes of the auctions and the sourcing management's decisions are not enforced, it can result in the lack of trust by the participant suppliers.

Knowledge and information asymmetry: The buyer firms rely on their incumbent suppliers to provide them products according to their required specifications. Often times, the design of these products is specific, depending to the buyer firm's needs. Such products are usually designed and developed by the supplier jointly with the buyer firm. In such cases, it is the incumbent supplier who has complete knowledge of the product design and the specifications. When a buyer firm decides to use RAs to expand its supply base, it faces the challenge to correctly specify its own needs. Such dilemma stems from the knowledge and information asymmetry between the buyer firm and the supply market. In such cases, the buyer cannot afford to ignore important criteria other than the price. When a buyer uses RAs as a sourcing strategy, it is difficult for it to evaluate the non-price criteria of the supplier's full capabilities (e.g., non-price value adds, alternative products, synergies, and bundled bids). It is hence important that in addition to suppliers' full capabilities and non-price value adds, the buyer firm evaluates the total cost of ownership when using RAs as a sourcing strategy. Total cost of ownership includes factors other than price such as transportation, insurance, and inventory costs. While it is possible to construct auctions that take into account the total cost of ownership, this is often not done because it is more complicated or time consuming to do so. Finally, when the buyer has assessed the supply base, the buyer needs to ensure that he/she properly educates the participating suppliers about the format of the auction and the award decision process. Suppliers may lack adequate understanding and knowledge of the reverse auction process and procedures. Capable but under-educated suppliers may lose the auction and thus deny themselves the opportunity to extract the advantages of the RA event.

Opportunism: Large firms are likely to adopt and use RAs as compared to small firms (Teo, Lin et al. 2009). A large buyer firm can leverage its relative strength and positioning in the market and use RAs to reduce purchasing cost. A large buyer firm in an open and sufficiently large market can always find suppliers who are interested in its business. The RAs inculcate the opportunistic attitude of a buyer firm. A buyer can exhibit opportunistic behavior by accepting quotes outside the RA event by starting discussion/negotiation with suppliers outside the online event. In order to drive down prices, the buyer may also intentionally include suppliers who will not be awarded the business. This results in the participating suppliers not being motivated to provide their best bid online. The failure of a buyer firm to honor the award terms deters future supplier participation. A buyer firm's opportunistic behavior and its urge to drive the prices down could result in supplier resentment. To maintain the profitability and honor the price they bid in the auction, the suppliers can reduce the quality of service and support.

CONCLUSION

Using a rigorous ranking type Delphi survey methodology we identified buyers' perceptions of the major risks associated with the use of internet enabled reverse auctions. We interpreted the identified risks as representing four themes: Inappropriate configuration of the auction process, Organizational and market conditions that make RAs ineffective, Knowledge and information asymmetry, and Opportunism. These themes and the underlying risks needed to be addressed simultaneously for successful RAs. Interestingly, our findings suggest that RAs are not considered as much threat to relational characteristics but rather require configuring the auction technology and parameters suitably, aligning the RA with the firm's and supply market's characteristics, alleviating asymmetries in information and knowledge about the award terms and auction process, and providing the right type of support for the execution of the auction.

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